

REMARKS

Claims 1, 3-8, 15-19 and 21-22 are pending in this application. Claims 2, 9-14, and 20 have been canceled. Each of the pending claims is believed to define an invention that is novel and unobvious over the cited references. Favorable reconsideration of this case is respectfully requested.

According to an embodiment of the invention shown in Figure 5, a reference unit 3 including a three axis gyro sensor is connected to the airframe 5 of an aircraft. The reference unit 3 reports gyroscopic data 67 representing aircraft motion to the system controller 2. A measurement unit 1 includes a two axis gimbal 12 with a payload including a video audio collimator (VAC) 14. The VAC 14 projects a beam to the reference unit 3. In order to perform an accurate measurement, the measurement unit 3 and reference unit 2 must be at a fixed orientation with respect to each other. A controller 2 provides steering signals to control the gimbal, along its two physical axes, to maintain the collimator and the reference unit at a fixed orientation with respect to those two physical axes. As the gimbal is restricted to two physical axes, a virtual third axis must be created to account for any movement of the air frame along that third axis with respect to the measurement unit. The controller can then mathematically compensate for the third axis while only using two physical axes, to determine the relative orientation of the measurement unit and the reference unit with respect to each other. By providing a gimbal that is restricted to two physical axes, a savings in the cost as well as a reduction in the size and weight of the measurement unit is achieved. This savings can be achieved without any reduction in the functionality of the device. Embodiments of the present invention allow to achieve the utility of three axes when only using a gimbal with movement about two physical axes and mathematically compensating for the third axis.

Figures 1 to 3 have been labeled as prior art as required by the Examiner. Replacement sheets of Figures 1 to 3 are submitted herewith on separate sheets. Accordingly, the withdrawal of the objection to the drawings is respectfully requested.

Claims 8 and 19-22 have been rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent Number 5,438,404 to Hamilton et al.

In an embodiment of the present invention, a station sensor 7, 9, 10 maybe oriented on the aircraft frame 5 with an offset with respect to the ADL aircraft reference line. Even in this case,

the station measurements can take place. For example, claim 8 now recites that a stationary inertial sensor is aligned on a device with an offset with respect to a reference line. The position of the device can then be transformed to a reference coordinate system other than the reference line coordinate system. Please see, for example, paragraph 47 of the present specification.

In contrast, Hamilton et al. makes no mention of the ability to offset the reference unit 3 with respect to a reference line or of transforming to a coordinate system other than the reference line.

Regarding claim 19, claim 19 now recites that a two-axis gimbal platform carrying circuitry for generating and electromagnetic beam is controlled to orient the platform about the two axes. A compensation for movement of the platform about a third axis is calculated. The position of the device with respect to the reference line using the detected angle, be compensation and the output data is then calculated. This provides the advantage for doing the work of a three axis gimbal platform, but only with a two-axis gimbal platform, and mathematically compensating for the third axis.

Hamilton et al. do not disclose controlling a two axis gimbal platform and compensating for the movement of the platform about third axis. Hamilton et al. make no mention of any mathematically compensation and require a three axis gimbal platform for operation of the device disclosed therein, see col. 9, lines 48-59.

In view of the above, it is clear that the cited reference does not disclose each and every element recited in the claims as is required by 35 U.S.C. 102. Therefore, the withdrawal of this rejection is respectfully requested.

Claims 1-7 have been rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 5,619,323 to Hamilton et al. in view of U.S. Patent Number 6,396,235 to Ellington et al.

As discussed above, Hamilton et al. do not mention a two-axis gimbal platform or compensating for a third axis. Ellington et al. do not supplemental Hamilton et al. to teach or suggest the claimed invention. Ellington et al. describe a stabilized common gimbal. Ellington et al. describe a gimbal that has two axes, azimuth and elevation. However, Ellington et al. make no

mention of compensating for movement of a platform about a third axis. Ellington et al. make no mention of the decoupling the roll axis, see column 2, lines 11-16.

In view of the above it is clear that the cited references taken alone or in combination, do not teach or suggest the features of the claimed invention. Therefore, the withdrawal of this rejection is respectfully requested.

Claims 15-18 have been allowed.

If the Examiner is of the opinion that the prosecution of this application would be advanced by a personal interview, the Examiner is invited to telephone undersigned counsel to arrange for such an interview.

The Commissioner is authorized to charge any fee necessitated by this Amendment to our Deposit Account No. 22-0261.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

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